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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/815,038
Filing Date: March 31, 2004
Appellant(s): BENZ ET AL.

Brett A. Valiquet
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/11/2009 appealing from the Office action mailed 10/27/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,535,518	Hu et al.	3-2003

2002/0063891 Ueda et al. 5-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 43-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu et al. (US 6,535,518) hereafter 'Hu', in view of Ueda et al. (US 2002/0063891) hereafter 'Ueda'.

Regarding Claims 1-42: (cancelled)

Regarding Claim 43: (new)

Ueda discloses a method to transfer print data in a server system having a first print data server, comprising the steps of:

providing the first print data server with a supplying computer module as a computer-readable medium having a computer program and which supplies print data

(FIG. 3 describes the software structure for the preferred embodiment for the data-driven multi-processor pipelined model. The functional relationship among the software modules is described at Column 11, line 34);

providing a reading computer module as a computer readable medium having a computer program that reads the supplied print data (In one of Hu's methods e.g., Once a file read request is sent to the host, the TWIP file system does not have to wait for response. It can proceed to process the next connection. After the host acknowledges the request (registration), the TWIP file system will go back to read the file as described in Column 17, lines 13-17);

selecting one of the following transmission modes

a complete storage of the print data in a file occurs before the reading computer module reads the print data (e.g., Authorized *non-real-time data transfer* between a network interface and a storage interface described in Column 5, lines 44-45.),

a segment-by-segment storage of the data in a file occurs such that the reading computer module already begins with the reading of a segment while the supplying computer module is still supplying print data (e.g., The data content then is divided into segments of integral multiples of a fixed base, a process that we call "base-multiple segmentation" (BMS) technology. For example, a base of y bytes, say 2 Kbytes, is chosen, and all data streams or files are *segmented into chunks* of integral multiples of 2 Kbytes, like 2, 4, or 8 Kbytes (padding it for the last chunk if it is not an exact integral multiple of 2 Kbytes), with an upper limit of, say, 40 Kbytes (20 times y). The maximum size is chosen based-on the requirement of isochronous real-time traffic and the switching speed, such that it will still meet the tightest real-time needs while the switching element serves the largest segments as described in Column 6, lines 3-12), and

a direct transmission of the print data between the supplying computer module and the reading computer module occurs without buffering (e.g., Authorized *real-time data transfer* between a network interface and a storage interface as described in Column 5, lines 42-43.);

controlling the selecting of the transmission mode by at least one control parameter predetermined in a print job manager, the reading computer module and the supplying computer module cooperating via the at least one control parameter(e.g., Once the nature of the traffic is determined, by consulting the Expanded Routing Table (ERT) (with more information than a regular routing table), as shown in FIG. 14, a proper switching path can be selected to forward the traffic with proper QoS measurement. For instance, higher priority traffic can be given more bandwidth and/or lower delay. The forwarded traffic to the network will then be processed with the proper protocol format conversion for transmission with all the necessary error checking and/or correction as described in Column 6, lines 19-27.); and

also controlling the selecting of the transmission mode dependent on the print job (e.g., Once the nature of the traffic is determined, by consulting the Expanded Routing Table (ERT) (with more information than a regular routing table), as shown in FIG. 14, a proper switching path can be selected to forward the traffic with proper QoS measurement. For instance, higher priority traffic can be given more bandwidth and/or lower delay. The forwarded traffic to the network will then be processed with the proper protocol format conversion for transmission with all the necessary error checking and/or correction as described in Column 6, lines 19-27.).

Hu discloses a networked system, and methods of increasing the network and storage access performance and throughput; however

Hu does not disclose expressly a print data system in conjunction with a print data server.

Ueda discloses a print data system with a print data server (Server 106, Printer 104, and Network 105 of Figure 1).

Ueda & Hu are combinable because they are from the same field of endeavor of image processing; e.g., both references disclose methods of reducing the load on a server and a network. At the time of the invention, it would have been obvious to a

person of ordinary skill in the art to further disclose the use of a print server within Hu's data network. The suggestion/motivation for doing so would have been to take into account that some data traffic may be intended to be printed and to include a networked print server that can accept print jobs from another server or devices within the network and to send the jobs to the appropriate printers. This would ensure that there is always a printer available to process a print job. If one printer is temporarily out of service for some reason, then the print job can be routed to an available printer. Therefore, it would have been obvious to combine Hu's system for achieving higher throughput in a data network with Ueda's networked print server to obtain the invention as specified in order to save time and money.

Regarding Claim 52: (new)

Claim 52 recites the same limitations as method Claim 43, except that Claim 52 is a system of Claim 43, thus the rejection as applied to Claim 43 is equally applicable to Claim 52.

Regarding Claim 44. (new)

Hu further discloses the method according to claim 43 wherein in the transmission mode with the direct transmission of the data, the reading computer module reacts, controlled by at least one parameter, in one of the following manners when data to be read no longer exists:

the read event is continuously repeated until data to be read is present, or until the reading computer module receives the notification that data is no longer being supplied, or the read event is aborted (e.g., In the second method, the host write request is intercepted by the TWIP host device driver. The TWIP host device driver then generates a write request (w_req). Then TWIP completes all outstanding read requests and sends back a write acknowledgement (w_ack) to the host and routes all future read requests to the host. Upon receiving the signal w_ack at the host, the TWIP host device driver releases the hold on the original write requests and proceeds to write (thick vertical line on host in FIG. 5). Once the host finishes all outstanding write operations, the TWIP device driver detects this and sends write-release (w_rel) to TWIP. When TWIP receives w_rel, it resumes the bypass function if it can handle the new incoming requests as described in Column 17, lines 17-28).

Regarding Claim 53: (new)

Claim 53 recites the same limitations as method Claim 44, except that Claim 53 is a system of Claim 44, thus the rejection as applied to Claim 44 is equally applicable to Claim 53.

Regarding Claim 45: (new)

Hu further discloses the method according to claim 43 wherein the data are supplied in blocks in a block format determined by the supplying computer module (FIG. 6 depicts the relationship among the buffer cache, the TWIP file system, and the TWIP file system device driver. The buffer cache allocates buffer pages for blocks of data on the disk. Each page corresponds to a block on the disk as described in Column 18, lines 16-20.)

Regarding Claim 54: (new)

Claim 54 recites the same limitations as method Claim 45, except that Claim 54 is a system of Claim 45, thus the rejection as applied to Claim 45 is equally applicable to Claim 54.

Regarding Claim 46: (new)

Hu further discloses the method according to claim 43 wherein the data transmission of the data occurs via a socket connection established between the supplying computer module and the reading computer module (Referring to Figure 4: TCB Tx Queue (812)/Rx Queue (811)--This is the socket queue for transmitting (812) and receiving (811).

Regarding Claim 55: (new)

Claim 55 recites the same limitations as method Claim 46, except that Claim 55 is a system of Claim 46, thus the rejection as applied to Claim 46 is equally applicable to Claim 55.

Regarding Claim 47: (new)

Hu further discloses the method according to claim 43 wherein given the storage in segments of print data, print data of a print job are already further processed via the reading computer module in a subsequent process, while subsequent print data of the same print job are still being stored (FIGS. 11 and 12 are flow charts for data flow from network to storage or vice-versa.)

Regarding Claim 56: (new)

Claim 56 recites the same limitations as method Claim 47, except that Claim 54 is a system of Claim 47, thus the rejection as applied to Claim 47 is equally applicable to Claim 56.

Regarding Claim 48: (new)

Hu further discloses the method according to claim 43 wherein the transmission mode to be applied is established dependent on the print job in a print job corollary file (e.g., Once the nature of the traffic is determined, by consulting the Expanded Routing Table (ERT) (with more information than a regular routing table), as shown in FIG. 14, a proper switching path can be selected to forward the traffic with proper QoS measurement. For instance, higher priority traffic can be given more bandwidth and/or lower delay. The forwarded traffic to the network will then be processed with the proper protocol format conversion for transmission with all the necessary error checking and/or correction as described in Column 6, lines 19-27.)

Regarding Claim 57: (new)

Claim 57 recites the same limitations as method Claim 48, except that Claim 54 is a system of Claim 48, thus the rejection as applied to Claim 48 is equally applicable to Claim 57.

Regarding Claim 49: (new)

A method according to claim 43 wherein the reading computer module runs on a second print data server (In this description, there are three types of logical medium interfaces: the network, storage and server(s). In actual implementation, various physical interfaces are possible, e.g., multiple network interfaces or storage interfaces or multiple servers ; There may also be a speed matching function between the network and storage, load balancing functions for servers as described in Column 8, lines 9-20.).

Regarding Claim 58: (new)

Claim 58 recites the same limitations as method Claim 49, except that Claim 58 is a system of Claim 49, thus the rejection as applied to Claim 49 is equally applicable to Claim 58.

Regarding Claim 50: (new)

A method according to claim 43 wherein both the supplying computer module and the reading computer module run on the first server (In this description, there are three types of logical medium interfaces: the network, storage and server(s). In actual implementation, various physical interfaces are possible, e.g., multiple network interfaces or storage interfaces or multiple servers ; There may also be a speed matching function between the network and storage, load balancing functions for servers as described in Column 8, lines 9-20.).

Regarding Claim 59: (new)

Claim 59 recites the same limitations as method Claim 50, except that Claim 59 is a system of Claim 50, thus the rejection as applied to Claim 50 is equally applicable to Claim 59.

Regarding Claim 51: (new)

A method to transfer data in a print data service system comprising at least first and second print data servers, comprising the steps of:

providing the first print data server with a supplying computer module as a computer readable medium having a computer program supplying print data (FIG. 3 describes the software structure for the preferred embodiment for the data-driven multi-processor pipelined model. The functional relationship among the software modules is described at Column 11, line 34);

providing the second print data server with a reading computer module as a computer-readable medium having a computer program that reads the supplied print data **(FIG. 3 describes the software structure for the preferred embodiment for the data-driven multi-processor pipelined model. The functional relationship among the software modules is described at Column 11, line 34);** (In this description, there are three types of logical medium interfaces: the network, storage and server(s). In actual implementation, various physical interfaces are possible, e.g., multiple network interfaces or storage interfaces or multiple servers ; There may also be a speed matching function between the network and storage, load balancing functions for servers as described in Column 8, lines 9-20.);

selecting one of the following transmission modes

a complete storage of the print data in a file occurs before the reading computer module reads the print data (e.g., Authorized *non-real-time data transfer* between a network interface and a storage interface described in Column 5, lines 44-45.),

a segment-by-segment storage of the data in a file occurs such that the reading computer module already begins with the reading of a segment while the supplying computer module is still supplying print data (e.g., The data content then is divided into segments of integral multiples of a fixed base, a process that we call "base-multiple segmentation" (BMS) technology. For example, a base of y bytes, say 2 Kbytes, is chosen, and all data streams or files are *segmented into chunks* of integral multiples of 2 Kbytes, like 2, 4, or 8 Kbytes (padding it for the last chunk if it is not an exact integral multiple of 2 Kbytes), with an upper limit of, say, 40 Kbytes (20 times y). The maximum size is chosen based-on the requirement of isochronous real-time traffic and the switching speed, such that it will still meet the tightest real-time needs while the switching element serves the largest segments as described in Column 6, lines 3-12), and

a direct transmission of the print data between the supplying computer module and the reading computer module occurs without buffering; controlling the selecting of the transmission mode by at least one control parameter predetermined in a print job manager, the reading computer module and the supplying computer module cooperating via the at least one control parameter (e.g., Authorized *real-time data transfer* between a network interface and a storage interface as described in Column 5, lines 42-43.);

also controlling the selecting of the transmission mode dependent on the print job (e.g., Once the nature of the traffic is determined, by consulting the Expanded Routing Table (ERT) (with more information than a regular routing table), as shown in FIG. 14, a proper switching path can be selected to forward the traffic with proper QoS measurement. For instance, higher priority traffic can be given more bandwidth and/or lower delay. The forwarded traffic to the network will then be processed with the proper protocol format conversion for transmission with all the necessary error checking and/or correction as described in Column 6, lines 19-27.);

the data being supplied in blocks in a block format predetermined by the supplying computer module(FIG. 6 depicts the relationship among the buffer cache, the TWIP file system, and the TWIP file system device driver. The buffer cache allocates buffer pages for blocks of data on the disk. Each page corresponds to a block on the disk as described in Column 18, lines 16-20.); and

given the storage in segments of print data, print data of a print job are already further processed via the reading computer module in a subsequent process, while subsequent print data of the same print job are still being stored (FIGS. 11 and 12 are flow charts for data flow from network to storage or vice-versa.).

(10) Response to Argument

Regarding Applicant's Argument: (page 9, lines 15-19)

First it is noted that even with Hu's category 1 real-time data transfer *that it is segmented* according to column 6, lines 1-18. But claim 43 requires a direct transmission without buffering. But segmenting is buffering. Thus Hu teaches away because he segments the real-time transfer. Thus there is no direct transmission without buffering as recited in claim 43.

Examiner's Response:

The Examiner respectfully disagrees with the Applicant regarding segmenting and buffering. Buffering requires the use of memory to temporarily store data, while segmenting does not require the use of stored memory. A data stream that is segmented into bytes of data can be transmitted in real time without being buffered. The Examiner perceives the real-time transfer of data to inherently imply the absence of a data buffer. Hu further discloses the motivation for improving real-time transmission of data by the use of high layer protocols is to optimize system performance and improve fault-tolerance (Column 5, lines 9-15).

Regarding Applicant's Argument: (page 9, lines 20-23)

Secondly, Hu clearly teaches that the real-time and the non-real-time transfer is to a storage *and not to the server 120.* There is no reading of the supplied print data at a reading computer module but only a storage of the data in the storage by a *writing.* Thus Hu teaches away.

Examiner's Response:

Hu discloses "Depending on the nature of the application (in part or in whole), the traffic can be categorized as server-oriented, which will be sent to server system, or storage-oriented (data retrieving), which will be transferred between the network and storage directly without the servers" (column 5, lines 15-25). The Examiner also refers to Figure 8, wherein data from Network 130 can go directly (by using a well known switching element) to Server 120 without going to a storage device.

Regarding Applicant's Argument: (page 10, lines 1-4)

Thirdly, claim 43 recites that for the segment-by-segment storage there is reading of the segment while the supplying computer is still supplying print data. There is no disclosure of this anywhere in the segmentation disclosure of Hu at column 6, lines 1-18.

Examiner's Response:

Hu discloses in Figure 15 for example wherein the fetching of data runs concurrently along with other requests of data. Hu further discloses an example of isochronous video or audio stream such as the case of "video on demand" (Column 5, lines 37-40). It is well known to one of ordinary skill in the art that real-time video or audio streaming is constantly fetching and supplying data.

Regarding Applicant's Argument: (page 10, lines 5-15)

Fourthly, claim 43 next recites controlling the selecting of the transmission mode by at least one control parameter predetermined in a print job manager. For this the Examiner cites the Expanded Routing Table (ERT) at column 6, line 20 of Hu. But this routing table ERT as shown in Figure 14 does not control segmenting or no segmenting, and does not control real-time or non-real-time transfer. Rather, if the data is real-time it routes the data to a storage, if it is non-real-time it routes the data to a storage, and if it is local it routes the data to the server S shown at 120 in Figure 8. Thus the ERT is not controlling the selection of the transmission mode but is only controlling the destination for the data either between storage or the server S at 120 in Figure 8. Thus Hu clearly does not disclose this controlling element of claim 43 for selecting the transmission mode.

Examiner's Response:

The Examiner respectfully disagrees with the Applicant. Hu discloses the use of high layer and cross layered switching architectures, that selects the transmission mode based on the type of data. For instance, web applications determine the size and nature of the transfer (e.g. text-only, still pictures and/or video clips) in the headers of application layer. Low layer protocols decide the size(s) of the packets at various network or system segments and the way to handle them (e.g. fixed size packet vs. variable size, packet size, delay tolerance and flow control methods such as window-

based flow control). Hu further discloses that by using upper layer information to help direct the low layer storage data transport, the benefits can be significant. For example, for streaming applications, data transport is streamed instead of switched packet-by-packet, thus achieving higher through put (Column 6, lines 42-58).

Regarding Applicant's Argument: (page 10, lines 16-21)

Fifthly, claim 43 distinguishes by reciting also controlling the selecting of the transmission mode dependent on the print job. But the real time data transfer or the non-real-time transfer at column 5, lines 41-46 of Hu in both cases goes to a storage and there is no change from real-time to non-real-time data transfer based on the type of print job. Also segmenting in Hu occurs 100% of the time and therefore whether to segment or not is clearly not dependent on the print job.

Examiner's Response:

The Examiner respectfully disagrees with the applicant. The portion of the text that the Applicant is citing is preceded by "Simplified examples of application categorizing include..." These are merely examples of various network situations disclosed by Hu. As explained in the Applicants fourth argument above, Hu does disclose wherein the size and nature of the job i.e., the type of job determines how the job is to be handled.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Neil R. McLean/

Examiner, Art Unit 2625

Conferees:

/David K Moore/

Supervisory Patent Examiner, Art Unit 2625

/King Y. Poon/

Supervisory Patent Examiner, Art Unit 2625